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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,526	12/08/2006	Richard Spitz	10191/4608	9368

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EXAMINER	
HSIEH, HSIN YI	
ART UNIT	**PAPER NUMBER**
2811	
MAIL DATE	**DELIVERY MODE**
03/29/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/575,526	SPITZ ET AL.	
	Examiner	Art Unit	
	Hsin-Yi (Steven) Hsieh	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-24 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-24 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 November 2010* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20101122*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/22/2010 has been entered.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/22/2010 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

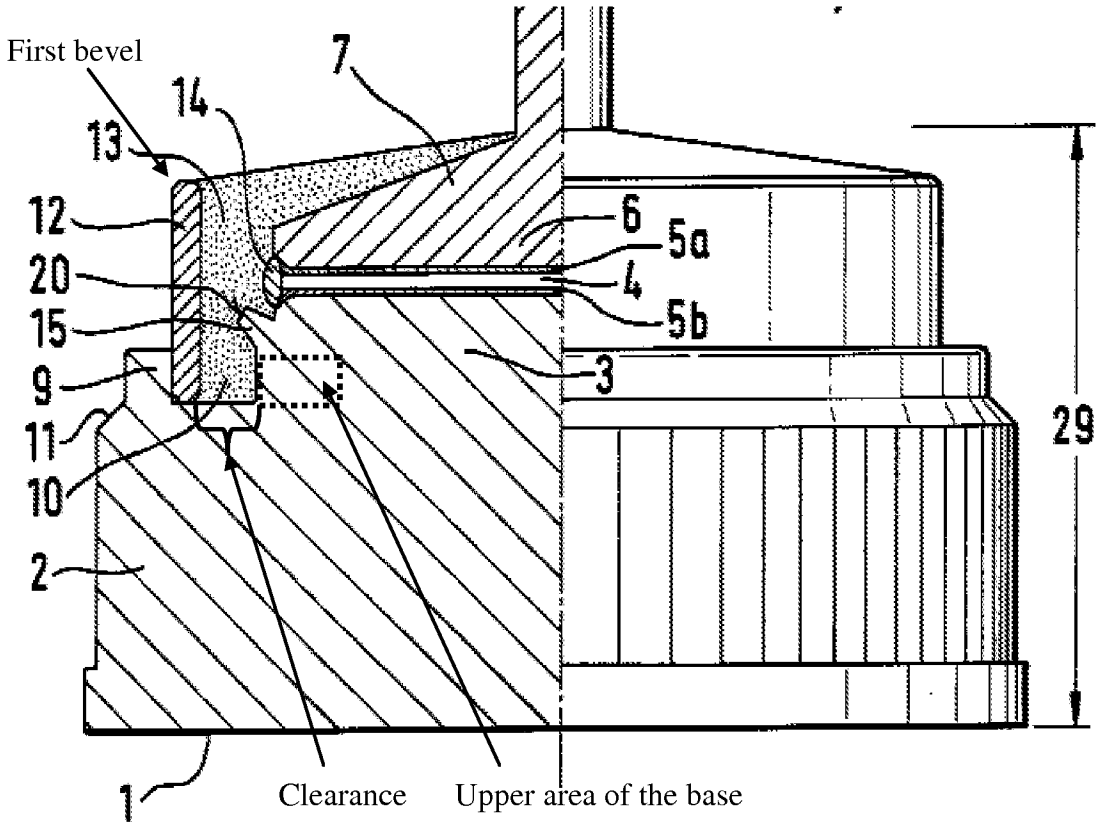
Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 15, 16 and 26** are rejected under 35 U.S.C. 102(b) as being anticipated by Spitz et al. (US 6,060,776 A).

5. Regarding **claim 15**, Spitz et al. teach a press-fit diode (rectifier diode 100; Fig. 1, col. 3 lines 15-16), comprising: a head wire (8; Fig. 1, col. 3 lines 21-22); a base (2; Fig. 1, col. 3 line 17); a chip (semiconductor chip 4; Fig. 1, col. 3 lines 19-20) connected via solder layers (solder 5a and 5b; Fig. 1, col. 3 lines 19-21) to the head wire (8) and to the base (2; Fig. 1, col. 3 lines 18-21); at least a first bevel (the bevel at the top outer corner of 12; see Fig. 1 below) located at a top (12 is a top portion of 12, 13, and 2; see Fig. 1 below) of a housing (12, 13 and 2) and a second bevel (press-fit region 11; Fig. 1, col. 3 line 25) located at a bottom (2 is a bottom portion of 12, 13, and 2) of the housing (12, 13 and 2), wherein the first and second bevels (the bevel at the top outer corner of 12 and 11) enable press-fitting of the diode (100; the bevel at the top outer corner of 12 eases the insertion of the diode and 11 is pressed fitted to the rectifier arrangement 36; see Figs. 2 and 3, col. 4 lines 32-54); and a plastic sheathing (protective sheath 12 and a package 13 of casting resin composition; Fig. 1, col. 3 lines 30-32 and 66-67) which includes a sleeve (protective sheath 12; Fig. 1, col. 3 lines 30-32) and is situated at least in an area around the chip (4; the sleeve 12 surrounds the chip 4; see Fig. 1) and forms a mechanical connection between the base (2) and the head wire (8; see Fig. 1, the sleeve 12 is mechanically connected to 2 and 8), wherein the base (2) at least partially encloses the plastic sheathing (12 and 13) and forms the housing (12, 13 and 2) with the plastic sheathing (12 and 13), and wherein the base (2) includes at least one undercut (shoulder 15; Fig. 1, col. 3 lines 36-37) which extends into the plastic sheathing (12 and 13; see Fig. 1), and wherein a clearance (see Fig. 1 below) is provided between the sleeve of the plastic sheathing (12) and an upper area of the base (2; see Fig. 1 below), the clearance preventing contact between the sleeve (12) and an outer edge (left edge in Fig. 1 below) of the upper area of the base (see Fig 1 below).



A portion of Fig. 1 of Spitz et al. showing the clearance, the first bevel, and the outer area of base

6. Regarding **claim 16**, Spitz et al. also teach the press-fit diode as recited in claim 15, wherein the base (the base 2) is made of at least one of an electrically conductive material and thermally conductive material (solid metal which is electrically conductive and thermally conductive; col. 1 lines 8-10 and 32).

7. Regarding **claim 26**, Spitz et al. also teach the press-fit diode as recited in claim 15, wherein the housing (12, 13 and 2) is made of at least one of an electrically conductive material and thermally conductive material (the base 2 is made of solid metal which is electrically conductive and thermally conductive; col. 1 lines 8-10 and 32).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in Graham **v.** John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. **Claims 17-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Spitz et al. as applied to claims 16 above.

11. Regarding **claim 17**, Spitz et al. also teach a height of the base (the height of the bulwark 9; Fig. 1, col. 3 line 50) is selected to achieve an adequate clamping of the base (2) and the head wire (8; i.e. the whole construction including 2 and 8, col. 3 lines 40-60).

Spitz et al. do not teach the height of the base is selected to be between 0.5 mm to 0.8 mm.

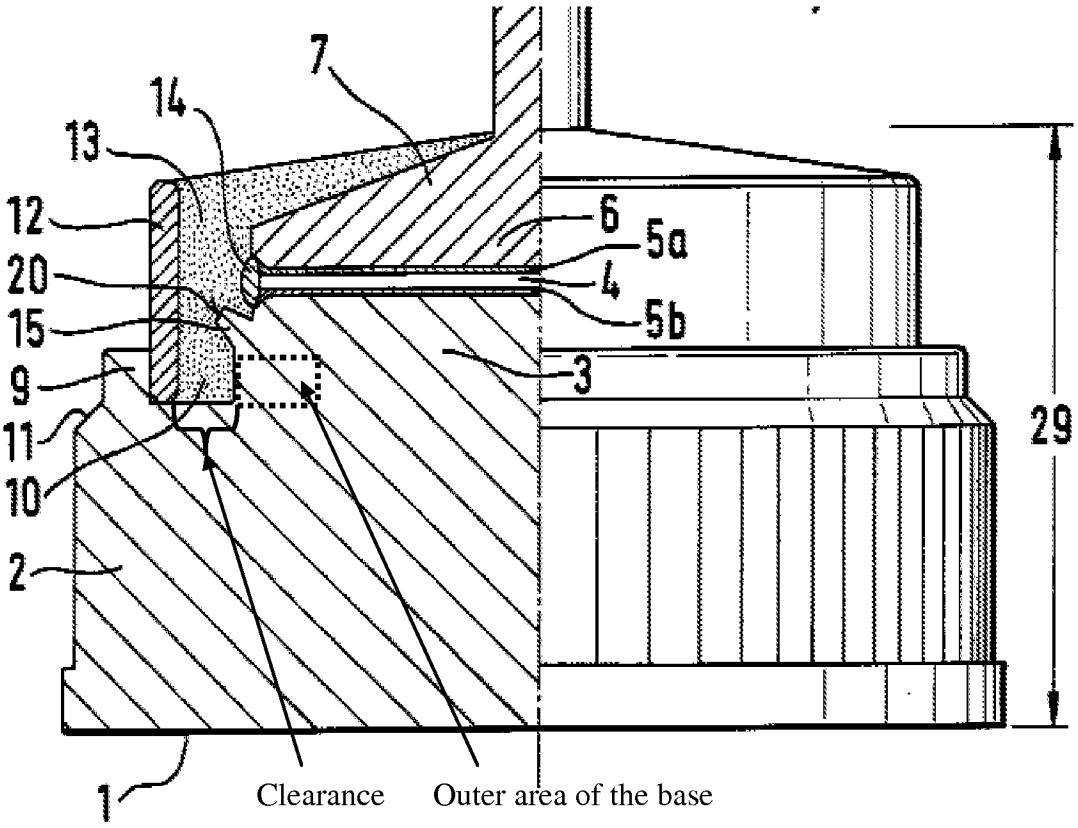
Parameters such as the height of the base in the art of semiconductor manufacturing process are subject to routine experimentation and optimization to achieve the desired structural strength during device fabrication. Therefore, it would have been obvious to one of the ordinary

skill in the art at the time the invention was made to incorporate the height of the base within the range as claimed in order to achieve the desired structural strength.

12. Regarding **claim 18**, Spitz et al. also teach the press-fit diode as recited in claim 17, wherein the first and second bevels (the bevels at the top outer corner of 12 and 11) enable the diode (100) to be pressed into a rectifier (rectifier arrangement 36; see Figs. 2 and 3, col. 4 lines 32-54).

13. Regarding **claim 19**, Spitz et al. also teach the press-fit diode as recited in claim 17, wherein the plastic sheathing (12 and 13) in the area around the chip (surrounding chip 4) is made up of an area (package 13; Fig. 1, col. 3 lines 30-32) filled with a casting compound (casting resin composition; col. 3 lines 66-67).

14. Regarding **claim 20**, Spitz et al. also teach the press-fit diode as recited in claim 17, wherein the clearance (the clearance between 12 and 2 filled with 13) has a predetermined depth (see Fig. 1 below) and is provided between the sleeve (12) and an outer area of the base (a portion of base 2 in contact with the right hand side of the trench 10; see the figure below).



A portion of Fig. 1 of Spitz et al. showing the clearance and the outer area of base

15. Regarding **claim 21**, Spitz et al. also teach the clearance (a portion of the trench 10 not occupied by the sheath 12) has a width (the horizontal width).

Spitz et al. do not teach the clearance has a width which is approximately 0.1 mm in at least one area of the clearance.

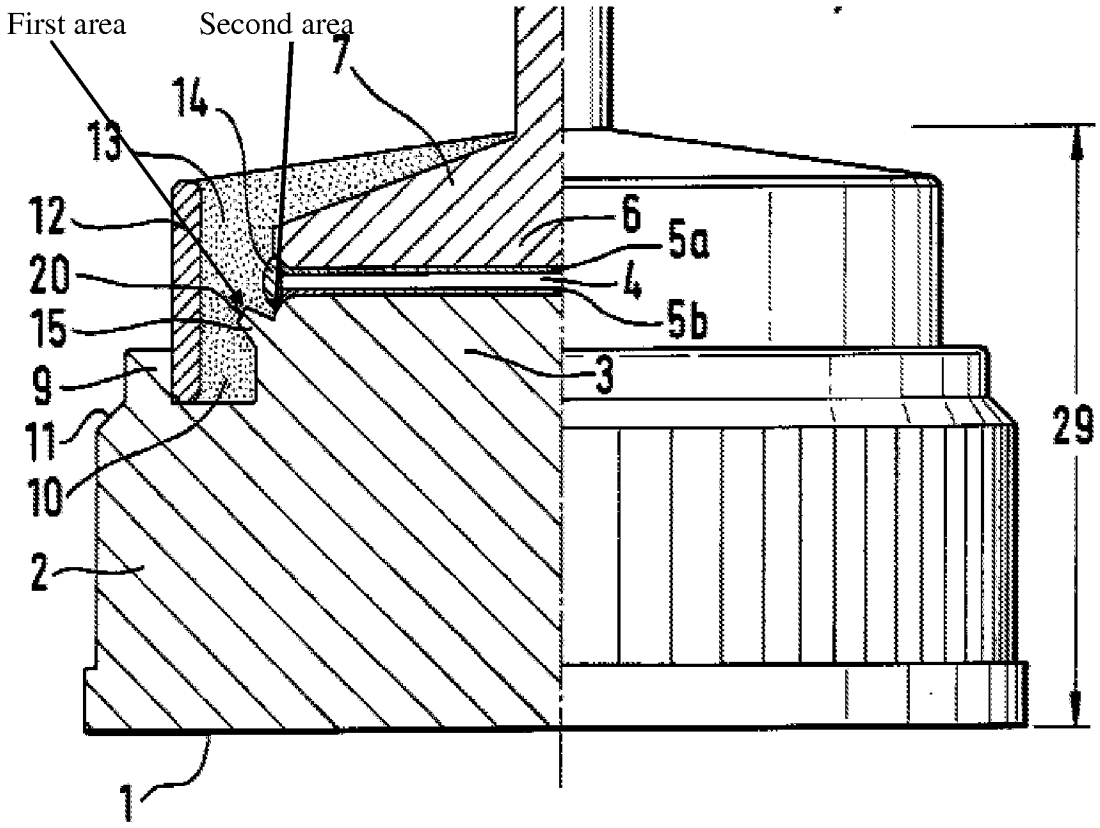
Parameters such as the width of the clearance in the art of semiconductor manufacturing process are subject to routine experimentation and optimization to achieve the desired structural strength during device fabrication. Therefore, it would have been obvious to one of the ordinary

skill in the art at the time the invention was made to incorporate the width of the clearance within the range as claimed in order to achieve the desired structural strength.

16. Regarding **claim 22**, Spitz et al. also teach the press-fit diode as recited in claim 21, wherein the width (the horizontal width) of the clearance (a portion of the clearance between 12 and 2 filled with 13 form the bottom of bulwark 9 till the top of the bulwark 9) is essentially uniform over the entire depth of the clearance (see Fig. 1).

17. Regarding **claim 23**, Spitz et al. also teach the press-fit diode as recited in claim 21, wherein the width (the horizontal width) of the clearance (a portion of the clearance between 12 and 2 filled with 13 form the bottom of bulwark 9 till the top of the shoulder 15) is variable over the depth of the clearance (see Fig. 1, the horizontal width of the clearance varies at the shoulder 15).

18. Regarding **claim 24**, Spitz et al. also teach the press-fit diode as recited in claim 17, wherein the base (2) includes an outer region (shoulder 15; Fig. 1, col. 3 line 37) having a first area (top area) with a first inner diameter (the diameter corresponds to the inner side of the shoulder 15 at the top) and a second area (lower area) with a second inner diameter (the diameter corresponds to the inner side of the shoulder 15 at a lower position) smaller than the first inner diameter (see the figure below).



A portion of Fig. 1 of Spitz et al. showing the first area and the second area

Response to Arguments

19. Applicant's amendments, filed 11/22/2010, overcome the objections to the drawings and the rejections to claim 18 under 35 U.S.C. 112. The objections to the drawings and the rejections to claim 18 under 35 U.S.C. 112 have been withdrawn.

20. On page 5 of Applicant's Response, Applicant argues the Examiner has objected to the Information Disclosure Statements filed on 4/10/06, 11/26/08 and 4/23/09 because "some references in IDS do not have legible copies." Since the Examiner has never identified which

specific references are missing legible copies, it is impossible for Applicants to comply with the Examiner's request.

21. The Examiner respectfully disagrees with Applicant's argument, because the references in IDS that do not have legible copies are crossed out in the reviewed IDS forms. Please see the three reviewed IDS forms dated 11/10/2009.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsin-Yi (Steven) Hsieh whose telephone number is 571-270-3043. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on 571-272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lynne A. Gurley/

Supervisory Patent Examiner, Art Unit 2811

/H. H./
Examiner, Art Unit 2811
3/23/2011